

INDIANA PROJECT WET



State Science Standards Correlation to Activities

Please use the following correlations of the Project WET activities to the Indiana State Science Standards for your planning needs.

Project WET provides workshops throughout the state, and they can be designed to meet your grade level or group needs.

Correlations will be available on line at:

projectwet.in.gov

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SIXTH THRU EIGHTH GRADE

SPECIAL THANKS TO:

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Project WET Activities correlated to the Indiana State Science Standards

Page	Project WET Activity
3	Check It Out! Explore a variety of performance assessment strategies
7	Idea Pools Become familiar with pre-assessment strategies
9	Let's Work Together Use cooperative learning strategies
12	Water Action Propose, analyze, and implement action strategies
19	Water Log Assess student learning through a journal of portfolio
25	Adventures in Density Experiment with density and explore examples of density in classic literature
30	H₂Olympics Compete in a water Olympics to investigate adhesion and cohesion
35	Hangin' Together Mimic hydrogen bonding in surface tension, ice formation, evaporation, and solutions
43	Is There Water on Zork? Test the properties of water
47	Molecule in Motion Simulate molecular movement in water's three states
50	Water Match Match water picture cards and discover the three states of water
54	What's the Solution Solve a crime while investigating the dissolving power of water
63	Aqua Bodies Estimate the amount of water in a person, a cactus, or a whale
66	Aqua Notes Sing to discover how the human body uses water
72	Let's Even Things Out Demonstrate osmosis and diffusion
76	Life Box (The) Discover the elements essential to life
79	Life in the Fast Lane Explore Temporary wetlands
85	No Bellyachers Show how pathogens are transmitted by water by playing a game of tag
89	People of the Bog Construct a classroom bog
93	Poison Pump Solve a mystery about a waterborne disease
99	Salt Marsh Players Role-play organisms adapted to life in a salt marsh
107	Super Sleuths Search for others who share similar symptoms of a waterborne disease
116	Thirsty Plants Demonstrate transpiration and conduct a field study
122	Water Address Analyze clues to match organisms with water-related adaptations
129	Branching Out! Construct a watershed model
133	Capture, Store, and Release Use a household sponge to demonstrate how wetlands get wet and how they contribute to a watershed
136	Get the Ground Water Picture Create an "earth window" to investigate ground water systems
144	Geyser Guts Demonstrate the workings of a geyser
150	Great Stony book (The) Create layers of buried fossils and read a great stony book
155	House of Seasons (A) Create a collage that peeks through a "window" to reveal the role of water in each season
157	Imagine! Imagine a water molecule on its water journey
161	Incredible Journey (The) Simulate the movement of water through Earth's systems
166	Just Passing Through Mimic the movement of water down a slope

171	Old Water Create a mural that relates events to the age of Earth, water, and life
Page	Project WET Activity
174	Piece It Together Explore global climates and their influence on lifestyles
182	Poetic Precipitation Simulate cloud formation and express feelings toward precipitation through poetry
186	Rainy -Day Hike Explore schoolyard topography and its effect on the watershed
191	Stream Sense Develop sensory awareness of a stream
196	Thunderstorm (The) Simulate the sounds of thunderstorm and create precipitation maps
201	Water Models Construct models of the water cycle and adapt them for different biomes
206	Wet Vacation Plot data to determine weather patterns and design appealing travel brochures
212	Wetland Soils in Living Color Classify soil types using a simple color key
219	A-maze-ing Water Negotiate a maze to investigate nonpoint source pollution
223	Color Me a Watershed Interpret maps to analyze changes in a watershed
232	Common Water Demonstrate that water is a shared resource
238	Drop in the Bucket (A) Calculate the availability of fresh water on Earth
242	Energetic Water Design devices to make water do work
246	Great Water Journeys Use clues to track great water journey of plants, people, and other animals on a map
254	Irrigation Interpretation Model different irrigation systems
260	Long Haul (The) Haul water to appreciate the amount of water used daily
262	Nature Rules! Write news stories based on natural, water-related disasters
267	Sum of the Parts Demonstrate nonpoint source pollution
271	Water Meter Construct a water meter and keep track of personal water use
274	Water Works Create a web of water users
279	Where Are the Frogs Run a simulation and experiment to understand the effects of acid rain
289	AfterMath Assess economic effects of water-related disasters
293	Back to the Future Analyze streamflow data to predict floods and water shortages
300	CEO (The) Become a Chief executive Officer (CEO) and learn about business/corporate water management challenges
303	Dust Bowls and Failed Levees Witness, through literature, the effects of drought and flood on human populations
307	Every Drop Counts Identify and implement water conservation habits
311	Grave Mistake (A) Analyze data to solve a ground water mystery
316	Humpty Dumpty Simulate a restoration project by putting the pieces of an ecosystem back together
322	Macroinvertebrate Mayhem Illustrate, through a game of tag, how macroinvertebrate populations indicate water quality
328	Money Down the Drain Observe and calculate water waste from a dripping faucet
333	Price is Right (The) Analyze costs for building a water development project
338	Pucker Effect (The) Simulate ground water testing to discover the source of contamination
344	Reaching Your Limits "Limbo" to learn basic water quality concepts and standards development
348	Sparkling Water Develop strategies to clean wastewater

353	Super Bowl Surge Develop a strategy to accommodate the demands on a wastewater treatment plant
Page	Project WET Activity
360	Wet-Work Shuffle Sequence the water careers involved in getting water to and from the home
367	Choices and Preferences, Water Index Develop a "water index" to rank water uses
373	Cold Cash in the Icebox Create a mini-insulator to prevent an ice cube from melting
377	Dilemma Derby Examine differing values in resolving water resource management dilemmas
382	Easy Street Compare quantities of water used in the late 1800s to the present
388	Hot Water Debate water issues
392	Pass the Jug Simulate water rights policies with a "jug" of water
397	Perspectives Identify values to solve water management issues
400	Water: Read All About It! Develop a Special Edition on water
403	Water Bill of Rights Create a document to guarantee the right to clean and sustainable water resources
407	Water Concentration Play concentration and discover how water use practices evolve
413	Water Court Participate in a mock court to settle water quality and quantity disputes
421	Water Crossings Simulate a water crossing and relate the historical significance of waterways
425	What's Happening? Conduct a community water use survey
429	Whose Problem Is It? Analyze the scope and duration of water issues to determine personal and global significance
435	Raining Cats and Dogs Discover how water proverbs vary among culture and climates
442	Rainstick (The) Build an instrument that imitates the sound of rain
446	Water Celebration Organize a water celebration with activities from this guide
450	wAteR in motion Create artwork that simulates the movement and sound of water in nature
454	Water Message in Stone Replicate ancient rock art, creating symbols of water
457	Water Write Explore feelings about and perception of water topics through writing exercises
460	Wish Book Compare recreational uses of water in the late 1800s and the present

Sixth Grade

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
Adventures in Density (25)		6.2.6 6.2.8	6.3.17 6.3.20		6.5.5	6.7.2
AfterMath (289)	6.1.7 6.1.8	6.2.5, 6.2.6 6.2.8	6.3.12	6.4.8	6.5.4 6.5.5	
A-maze-ing Water (219)	6.1.7	6.2.7	6.3.8 6.3.16		6.5.5	6.7.2 6.7.3
Back to the Future (293)	6.1.2 6.1.4	6.2.1 6.2.5, 6.2.6	6.3.8	6.4.8	6.5.2 6.5.4, 6.5.6	
Branching Out! (129)					6.5.5	6.7.1 6.7.2
Choices & Preferences (367)		6.2.1 6.2.5 6.2.6	6.3.8	6.4.8	6.5.4	
Common Water (232)	6.1.9		6.3.8	6.4.8	6.5.5	
Dilemma Derby (377)		6.2.7 6.2.8	6.3.8 6.3.16	6.4.8		
A Drop in the Bucket (238)	6.1.7	6.2.2 6.2.6 6.2.7, 6.2.8	6.3.7 6.3.8	6.4.8	6.5.2	
Easy Street (382)	6.1.8 6.1.9	6.2.2 6.2.5, 6.2.8	6.3.8 6.3.16	6.4.8	6.5.4	
Energetic Water (242)	6.1.1 6.1.9	6.2.4	6.3.17 6.3.23			
Every Drop Counts (307)	6.1.1 6.1.3 6.1.9	6.2.5 6.2.6 6.2.8	6.3.8 6.3.16	6.4.8	6.5.4 6.5.6	
Get the Ground Water (136)	6.1.7	6.2.5 6.2.6	6.3.19		6.5.4 6.5.6	6.7.2
Geyser Guts (144)	6.1.1	6.2.4 6.2.7	6.3.7 6.3.17			6.7.2
A Grave Mistake (311)	6.1.1 6.1.2	6.2.8	6.3.8 6.3.16		6.5.5	6.7.2
The Great Stony Book (150)	6.1.2	6.2.5 6.2.7			6.5.5	6.7.2
Great Water Journeys (246)	6.1.2	6.2.7				
H2O Olympics (30)	6.1.3	6.2.8				
Hangin' Together (35)			6.3.19			6.7.2
Humpty Dumpty (316)		6.2.4 6.2.7	6.3.16		6.5.5	

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
The Incredible Journey (161)			6.3.9 6.3.11 6.3.13		6.5.5	6.7.2
Irrigation Interpretation (254)			6.3.8 6.3.16	6.4.8		6.7.2
Is there Water on Zork? (43)	6.1.2	6.2.8				
Just Passing Through (166)			6.3.16	6.4.8		6.7.2
Let's Even Things Out (72)				6.4.7	6.5.5	6.7.2
Life in the Fast Lane (79)		6.2.5 6.2.6		6.4.8	6.5.4	
The Long Haul (260)	6.1.9		6.3.16		6.5.5	
Macro-invertebrate (322)		6.2.5 6.2.7	6.3.8 6.3.16	6.4.8	6.5.5	
Money Down the Drain (328)		6.2.5	6.3.8		6.5.2	
Nature Rules! (262)		6.2.7	6.3.12			
Old Water (171)	6.1.1	6.2.7	6.3.7			
Pass the Jug (392)			6.3.8	6.4.8		
Perspectives (397)		6.2.7 6.2.8				
Piece It Together (174)			6.3.5 6.3.9 6.3.12	6.4.10		
Poetic Precipitation (182)					6.5.5	
Poison Pump (93)	6.1.2	6.2.5				
The Pucker Effect (338)	6.1.2 6.1.3		6.3.8			6.7.2
Raining Cats and Dogs (435)					6.5.5	
Rainy-Day Hike (186)	6.1.2	6.2.3 6.2.8				
Reaching Your Limits (344)			6.3.8		6.5.2 6.5.5	

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
Sparkling Water (348)		6.2.5 6.2.8	6.3.8 6.3.19			
Sum of the Parts (267)			6.3.8 6.3.16		6.5.5	
Super Bowl Surge (353)		6.2.5 6.2.7, 6.2.8	6.3.8	6.4.8	6.5.5	
Super Sleuths (107)	6.1.2	6.2.5	6.3.8		6.5.5	
Thirsty Plants (116)				6.4.3 6.4.6 6.4.7		6.7.2

Seventh Grade

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
Adventures in Density (25)			7.3.13			
A-maze-ing Water (219)	7.1.7 7.1.8, 7.1.9			7.4.10 7.4.14		
Back to the Future (293)	7.1.7	7.2.5 7.2.7				
Branching Out! (129)						7.7.1, 7.7.2 7.7.3
Common Water (232)	7.1.8			7.4.10		
Easy Street (382)	7.1.8 7.1.9					
Energetic Water (242)	7.1.7		7.3.16			
Get the Ground Water (136)	7.1.3	7.2.7			7.5.4	
A Grave Mistake (311)	7.1.2 7.1.4 7.1.8			7.4.14		
H2O Olympics (30)			7.3.13			
Hangin' Together (35)			7.3.13			
Humpty Dumpty (316)	7.1.8					
Imagine! (157)						7.7.3
The Incredible Journey (161)		7.2.5				7.7.1
Irrigation Interpretation (254)	7.1.4 7.1.8 7.1.9			7.4.10		
Just Passing Through (166)						7.7.1
Let's Even Things Out (72)			7.3.13			7.7.1 7.7.3
The Long Haul (260)	7.1.8 7.1.9			7.4.10		
Nature Rules! (262)	7.1.4					
No Bellyachers (85)	7.1.9			7.4.10		

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
People of the Bog (89)			7.3.13			7.7.3
Perspectives (397)	7.1.4 7.1.8	7.2.7				
Poetic Precipitation (182)						7.7.3
Poison Pump (93)	7.1.1, 7.1.2 7.1.4, 7.1.9			7.4.10 7.4.14		
The Pucker Effect (338)	7.1.4	7.2.7	7.3.13	7.4.10 7.4.14	7.5.4	
Rainy-Day Hike (186)		7.2.7		7.4.14		7.7.1
Reaching Your Limits (344)				7.4.10 7.4.14		7.7.4
Sparkling Water (348)	7.1.7		7.3.13	7.4.10 7.4.14		
Sum of the Parts (267)				7.4.14		
Super Bowl Surge (353)	7.1.7 7.1.9			7.4.10 7.4.14		
Super Sleuths (107)	7.1.4 7.1.9			7.4.10 7.4.14		
Water Concentration (407)	7.1.7 7.1.8 7.1.9		7.3.16	7.4.10		
Water Models (201)			7.3.5			7.7.1
Water Works (274)	7.1.8 7.1.9			7.4.10		
Wet Vacation (206)			7.3.5			
Wet-Work Shuffle (360)	7.1.7 7.1.9					
Wetland Soils (212)		7.2.7			7.5.4	
What's the Solution? (54)	7.1.1		7.3.13			
Where Are the Frogs? (279)			7.3.13			

Eighth Grade

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
Adventures in Density (25)			8.3.9 8.3.15			8.7.7
A-maze-ing Water (219)	8.1.8		8.3.6			8.7.4
Back to the Future (293)	8.1.8	8.2.4 8.2.8	8.3.6		8.5.4 8.5.8	8.7.4 8.7.7
Choices & Preferences (367)	8.1.7		8.3.6		8.5.9	
Common Water (232)			8.3.6			
Dilemma Derby (377)			8.3.6			
A Drop in the Bucket (238)			8.3.6			
Easy Street (382)			8.3.6			
Energetic Water (242)			8.3.15			
Every Drop Counts (307)			8.3.6			
Get the Ground Water (136)		8.2.8				
Geyser Guts (144)			8.3.15			8.7.7
A Grave Mistake (311)		8.2.7			8.5.7	
H2O Olympics (30)		8.2.7	8.3.9			
Hangin' Together (35)			8.3.9 8.3.15			
Humpty Dumpty (316)	8.1.7		8.3.6			8.7.2
Imagine! (157)						8.7.7
The Incredible Journey (161)						8.7.7
Irrigation Interpretation (254)	8.1.1 8.1.8		8.3.6			8.7.2
Just Passing Through (166)			8.3.6			
Let's Even Things Out (72)			8.3.9			8.7.5
Life in the Fast Lane (79)						8.7.7
The Long Haul (260)	8.1.7		8.3.6			
Money Down the Drain (328)		8.2.2 8.2.4 8.2.8	8.3.6			

	The Nature of Science and Technology	Scientific Thinking	The Physical Setting	The Living Environment	The Mathematical World	Common Themes
ACTIVITY						
Old Water (171)						8.7.5
Pass the Jug (392)	8.1.7 8.1.8		8.3.6			
Perspectives (397)	8.1.7	8.2.7				
Piece It Together (174)			8.3.15			8.7.7
Poetic Precipitation (182)			8.3.9			8.7.7
Poison Pump (93)	8.1.8				8.5.6	
The Pucker Effect (338)			8.3.6 8.3.9		8.5.6	
Rainy-Day Hike (186)		8.2.8				8.7.4
Reaching Your Limits (344)	8.1.7	8.2.2	8.3.6			
Sparkling Water (348)	8.1.8					8.7.7
Sum of the Parts (267)			8.3.6			
Super Bowl Surge (353)	8.1.7 8.1.8	8.2.8				
Super Sleuths (107)	8.1.8		8.3.9			
Thirsty Plants (116)		8.2.2 8.2.8	8.3.9			8.7.7
Water Concentration (407)			8.3.6			
Water Meter (271)		8.2.2	8.3.6			
Water Models (201)			8.3.6 8.3.9 8.3.15			8.7.7
Wet Vacation (206)		8.2.8				8.7.7
Wet-Work Shuffle (360)	8.1.8					
Wetland Soils (212)		8.2.8				
Where Are the Frogs? (279)	8.1.3	8.2.8	8.3.6		8.5.4	

Standard 1

The Nature of Science and Technology

Students design investigations. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet it cannot always provide solutions to our needs.

The Scientific View of the World

- 6.1.1 Explain that some scientific knowledge, such as the length of the year, is very old and yet is still applicable today. Understand, however, that scientific knowledge is never exempt from review and criticism.

WET Activities (page): 144, 171, 242, 307, 311

Scientific Inquiry

- 6.1.2 Give examples of different ways scientists investigate natural phenomena and identify processes all scientists use, such as collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses* and explanations, in order to make sense of the evidence.

WET Activities (page): 43, 93, 107, 150, 186, 246, 293, 311, 338

- 6.1.3 Recognize and explain that hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.

*hypothesis: an informed guess or tentative explanation for which there is not yet much evidence

WET Activities (page): 30, 307, 338

The Scientific Enterprise

- 6.1.4 Give examples of employers who hire scientists, such as colleges and universities, businesses and industries, hospitals, and many government agencies.

WET Activities (page): 293, 360

Technology and Science

- 6.1.7 Explain that technology is essential to science for such purposes as access to outer space and other remote locations, sample collection and treatment, measurement, data collection and storage, computation, and communication of information.

WET Activities (page): 136, 219, 238, 289

- 6.1.8 Describe instances showing that technology cannot always provide successful solutions for problems or fulfill every human need.

WET Activities (page): 289, 382

6.1.9 Explain how technologies can influence all living things.

WET Activities (page): 232, 242, 260, 274, 307, 382, 407, 460

Standard 2

Scientific Thinking

Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.

Computation and Estimation

6.2.1 Find the mean* and median* of a set of data.

WET Activities (page): 271, 293, 367

6.2.2 Use technology, such as calculators or computer spreadsheets, in analysis of data.

*mean: the average obtained by adding the values and dividing by the number of values

*median: the value that divides a set of data, written in order of size, into two equal parts

WET Activities (page): 238, 382

Manipulation and Observation

6.2.3 Select tools, such as cameras and tape recorders, for capturing information.

WET Activities (page): 157, 186, 212

6.2.4 Inspect, disassemble, and reassemble simple mechanical devices and describe what the various parts are for. Estimate what the effect of making a change in one part of a system is likely to have on the system as a whole.

WET Activities (page): 144, 242, 316

Communication Skills

6.2.5 Organize information in simple tables and graphs and identify relationships they reveal. Use tables and graphs as examples of evidence for explanations when writing essays or writing about lab work, fieldwork, etc.

WET Activities (page): 79, 93, 107, 136, 150, 196, 212, 271, 279, 289, 293, 307, 322, 328, 348, 353, 367, 382, 429

6.2.6 Read simple tables and graphs produced by others and describe in words what they show.

WET Activities (page): 25, 79, 136, 238, 271, 289, 293, 307, 367

6.2.7 Locate information in reference books, back issues of newspapers and magazines, compact disks, and computer databases.

WET Activities (page): 12, 144, 150, 171, 201, 219, 238, 246, 262, 316, 322, 353, 360, 377, 397, 407, 421, 429, 460

- 6.2.8 Analyze and interpret a given set of findings, demonstrating that there may be more than one good way to do so.
WET Activities (page): 12, 25, 30, 43, 186, 201, 238, 289, 307, 311, 348, 353, 377, 382, 397, 421

Standard 3

The Physical Setting

Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.

The Earth and the Processes That Shape It

- 6.3.5 Use models or drawings to explain that Earth has different seasons and weather patterns because it turns daily on an axis that is tilted relative to the plane of Earth's yearly orbit around the sun. Know that because of this, sunlight falls more intensely on different parts of Earth during the year (the accompanying greater length of days also has an effect) and the difference in heating produces seasons and weather patterns.
WET Activities (page): 174, 206
- 6.3.7 Understand and describe the scales involved in characterizing Earth and its atmosphere. Describe that Earth is mostly rock, that three-fourths of its surface is covered by a relatively thin layer of water, and that the entire planet is surrounded by a relatively thin blanket of air.
WET Activities (page): 144, 238
- 6.3.8 Explain that fresh water, limited in supply and uneven in distribution, is essential for life and also for most industrial processes. Understand that this resource can be depleted or polluted, making it unavailable or unsuitable for life.
WET Activities (page): 12, 107, 219, 232, 238, 254, 267, 271, 274, 279, 293, 307, 311, 322, 328, 338, 344, 348, 353, 367, 377, 382, 392, 429
- 6.3.9 Illustrate that the cycling of water in and out of the atmosphere plays an important role in determining climatic patterns.
WET Activities (page): 157, 161, 174, 201, 206,
- 6.3.11 Identify and explain the effects of oceans on climate.
WET Activities (page): 161, 206
- 6.3.12 Describe ways human beings protect themselves from adverse weather conditions.
WET Activities (page): 174, 196, 262, 289
- 6.3.13 Identify, explain, and discuss some effects human activities, such as the creation of pollution, have on weather and the atmosphere.
WET Activities (page): 161, 279
- 6.3.15 Explain that although weathered* rock is the basic component of soil, the composition and texture of soil and its fertility and resistance to erosion* are

greatly influenced by plant roots and debris, bacteria, fungi, worms, insects, and other organisms.

WET Activities (page): 212

- 6.3.16 Explain that human activities, such as reducing the amount of forest cover, increasing the amount and variety of chemicals released into the atmosphere, and farming intensively, have changed the capacity of the environment to support some life forms.

*weathering: breaking down of rocks and other materials on Earth's surface by such processes as rain or wind.

*erosion: the process by which the products of weathering are moved from one place to another

WET Activities (page): 166, 219, 254, 260, 267, 279, 307, 311, 316, 322, 377, 382

Matter* and Energy*

- 6.3.17 Recognize and describe that energy is a property of many objects and is associated with heat, light, electricity, mechanical motion, and sound.

WET Activities (page): 25, 144, 242,

- 6.3.19 Investigate that materials may be composed of parts that are too small to be seen without magnification.

WET Activities (page): 35, 136, 348

- 6.3.20 Investigate that equal volumes* of different substances usually have different masses as well as different densities*.

matter: anything that has mass and takes up space

*mass: a measure of how much matter is in an object

energy: what is needed to do work

work: a force acting over a distance to move an object

force: a push or a pull that can cause a change in the motion of an object

*motion: a change in position of an object in a certain amount of time

*volume: a measure of the size of a three-dimensional object

*density: the density of a sample is the sample's mass divided by its volume

WET Activities (page): 25

Forces of Nature

- 6.3.22 Demonstrate that vibrations in materials set up wavelike disturbances, such as sound and earthquake waves*, that spread away from the source.

WET Activities (page): 450

- 6.3.23 Explain that electrical circuits* provide a means of transferring electrical energy from sources such as generators to devices in which heat, light, sound, and chemical changes are produced.

*wave: traveling disturbance that carries energy from one place to another

*circuit: the complete path of an electric current

WET Activities (page): 242

Standard 4

The Living Environment

Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.*

Diversity of Life

- 6.4.3 Describe some of the great variety of body plans and internal structures animals and plants have that contribute to their being able to make or find food and reproduce.

WET Activities (page): 116

- 6.4.6 Distinguish the main differences between plant and animal cells, such as the presence of chlorophyll* and cell walls in plant cells and their absence in animal cells.

WET Activities (page): 116

- 6.4.7 Explain that about two-thirds of the mass of a cell is accounted for by water. Understand that water gives cells many of their properties.

*species: a category of biological classification that is comprised of organisms sufficiently and closely related as to be potentially able to mate with one another

chlorophyll: a substance found in green plants that is needed for photosynthesis

*photosynthesis: a process by which green plants use energy from sunlight to make their own food

WET Activities (page): 72, 116

Interdependence of Life and Evolution

- 6.4.8 Explain that in all environments, such as freshwater, marine, forest, desert, grassland, mountain, and others, organisms with similar needs may compete with one another for resources, including food, space, water, air, and shelter. In any environment, the growth and survival of organisms depend on the physical conditions.

WET Activities (page): 79, 122, 166, 232, 238, 254, 274, 279, 289, 293, 307, 322, 353, 367, 377, 382, 392

- 6.4.10 Describe how life on Earth depends on energy from the sun.

*producer: an organism that can make its own food

*consumer: an organism that feeds directly or indirectly on producers

*predator: an organism that kills and eats other organisms

*prey: an organism that is killed and eaten by a predator

*parasite: an organism that feeds on other living organisms

*host: an organism in which or on which another organism lives

WET Activities (page): 174

Standard 5

The Mathematical World

Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and the use of logical reasoning in the representation and synthesis of data.

Numbers

6.5.2 Evaluate the precision and usefulness of data based on measurements taken.

WET Activities (page): 212, 238, 293, 328, 344,

Shapes and Symbolic Relationships

6.5.4 Demonstrate how graphs may help to show patterns, such as trends, varying rates of change, gaps, or clusters, which can be used to make predictions.

*sphere: a shape best described as that of a round ball, such as a baseball, that looks the same when seen from all directions

WET Activities (page): 79, 136, 196, 212, 289, 293, 307, 367, 382

Reasoning and Uncertainty

6.5.5 Explain the strengths and weaknesses of using an analogy to help describe an event, object, etc.

WET Activities (page): 25, 72, 107, 129, 150, 161, 182, 196, 219, 232, 260, 267, 274, 289, 311, 316, 322, 344, 353, 435

6.5.6 Predict the frequency of the occurrence of future events based on data.

WET Activities (page): 136, 293, 307

Standard 7

Common Themes

Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.

Systems

6.7.1 Describe that a system, such as the human body, is composed of subsystems.

WET Activities (page): 129

Models and Scale

6.7.2 Use models to illustrate processes that happen too slowly, too quickly, or on too small a scale to observe directly, or are too vast to be changed deliberately, or are potentially dangerous.

WET Activities (page): 25, 35, 72, 116, 129, 136, 144, 150, 161, 166, 201, 219, 254, 311, 338, 421, 450

Constancy and Change

6.7.3 Identify examples of feedback mechanisms within systems that serve to keep changes within specified limits.

WET Activities (page): 219

Standard 1

The Nature of Science and Technology

Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.

The Scientific View of the World

- 7.1.1 Recognize and explain that when similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often takes further studies to decide.

WET Activities (page): 93

Scientific Inquiry

- 7.1.2 Explain that what people expect to observe often affects what they actually do observe and provide an example of a solution to this problem.

WET Activities (page): 93, 311

- 7.1.3 Explain why it is important in science to keep honest, clear, and accurate records.

WET Activities (page): 136

- 7.1.4 Describe that different explanations can be given for the same evidence, and it is not always possible to tell which one is correct without further inquiry.

WET Activities (page): 93, 107, 254, 262, 311, 338, 397

Technology and Science

- 7.1.7 Explain how engineers, architects, and others who engage in design and technology use scientific knowledge to solve practical problems.

WET Activities (page): 219, 242, 293, 348, 353, 360, 407

- 7.1.8 Explain that technologies often have drawbacks as well as benefits. Consider a technology, such as the use of pesticides, which help some organisms but may hurt others, either deliberately or inadvertently.

WET Activities (page): 219, 232, 254, 260, 274, 311, 316, 382, 397, 407

- 7.1.9 Explain how societies influence what types of technology are developed and used in fields such as agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, and communication.

WET Activities (page): 85, 93, 107, 219, 254, 260, 274, 353, 360, 382, 392, 407

Standard 2

Scientific Thinking

Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.

Computation and Estimation

- 7.2.5 Estimate probabilities of outcomes in familiar situations, on the basis of history or the number of possible outcomes.

*area: a measure of the size of a two-dimensional region

*volume: a measure of the size of a three-dimensional object

*significant figures: digits that appropriately express the precision of a measurement or quantity derived mathematically from one or more measurements

WET Activities (page): 161, 293

Communication Skills

- 7.2.7 Incorporate circle charts, bar and line graphs, diagrams, scatter plots*, and symbols into writing, such as lab or research reports, to serve as evidence for claims and/or conclusions.

*scatter plot: a coordinate graph showing ordered pairs of data

WET Activities (page): 136, 186, 212, 293, 338, 397

Standard 3

The Physical Setting

Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.

- 7.3.5 Recognize and explain that heat energy carried by ocean currents has a strong influence on climate around the world.

WET Activities (page): 174, 201, 206

Matter* and Energy*

- 7.3.13 Explain that many substances dissolve in water. Understand that the presence of these substances often affects the rates of reactions that are occurring in the water as compared to the same reactions occurring in the water in the absence of the substances.

WET Activities (page): 25, 30, 35, 72, 89, 338, 348

- 7.3.16 Recognize and explain that different ways of obtaining, transforming, and distributing energy have different environmental consequences.

matter: anything that has mass and takes up space

*mass: the amount of matter in an object

energy: what is needed to do work

work: a force acting over a distance to move an object

force: a push or a pull that can cause a change in the motion of an object

*motion: a change in position of an object in a certain amount of time

wavelength: the distance between two consecutive, similar points on a wave

*wave: traveling disturbance that carries energy from one place to another

*infrared radiation: electromagnetic radiation having wavelengths longer than those of red light but shorter than microwaves

*ultraviolet radiation: electromagnetic radiation having wavelengths shorter than those of visible light but longer than those of x-rays

*temperature: a measure of average heat energy that can be measured with a thermometer

*acidity: a measure of the hydrogen ion concentration in a chemical system

WET Activities (page): 242, 407

Standard 4

The Living Environment

Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its basis at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.

Human Identity

- 7.4.10 Describe how technologies having to do with food production, sanitation, and disease prevention have dramatically changed how people live and work and have resulted in changes in factors that affect the growth of human population.

WET Activities (page): 85, 93, 107, 219, 232, 254, 260, 274, 338, 344, 348, 353, 407

- 7.4.14 Explain that the environment may contain dangerous levels of substances that are harmful to human beings. Understand, therefore, that the good health of individuals requires monitoring the soil, air, and water as well as taking steps to keep them safe.

WET Activities (page): 93, 107, 186, 219, 267, 311, 338, 344, 348, 353

Standard 5

The Mathematical World

Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, statistical relationships, and the use of logical reasoning, in the representation and synthesis of data.

Reasoning and Uncertainty

- 7.5.4 Describe that the larger the sample, the more accurately it represents the whole. Understand, however, that any sample can be poorly chosen and this will make it unrepresentative of the whole.

WET Activities (page): 136, 212, 338

Standard 6

Historical Perspectives

Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.

- 7.6.1 Understand and explain that throughout history, people have created explanations for disease. Note that some held that disease had spiritual causes, but that the most persistent biological theory over the centuries was that illness resulted from an imbalance in the body fluids. Realize that the introduction of germ theory by Louis Pasteur and others in the 19th century led to the modern understanding of how many diseases are caused by microorganisms, such as bacteria, viruses, yeasts, and parasites.

WET Activities (page): 93

Standard 7

Common Themes

Students analyze the relationships within systems. They investigate how different models can represent the same data, rates of change, cyclic changes, and changes that counterbalance one another.

Systems

- 7.7.1 Explain that the output from one part of a system, which can include material, energy, or information, can become the input to other parts and this feedback can serve to control what goes on in the system as a whole.

WET Activities (page): 72, 129, 161, 166, 186, 201

Models and Scale

- 7.7.2 Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.

WET Activities (page): 129

Constancy and Change

- 7.7.3 Describe how physical and biological systems tend to change until they reach equilibrium and remain that way unless their surroundings change.

WET Activities (page): 72, 89, 129, 157, 182

- 7.7.4 Use symbolic equations to show how the quantity of something changes over time or in response to changes in other quantities.

WET Activities (page): 344

Standard 1

The Nature of Science and Technology

Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.

The Scientific View of the World

- 8.1.1 Recognize that and describe how scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory* leads to looking at old observations in a new way.

WET Activities (page): 254

Scientific Inquiry

- 8.1.3 Recognize and describe that if more than one variable changes at the same time in an experiment, the outcome of the experiment may not be attributable to any one of the variables.

WET Activities (page): 279

Technology and Science

- 8.1.7 Explain why technology issues are rarely simple and one-sided because contending groups may have different values and priorities.

WET Activities (page): 260, 274, 316, 344, 353, 367, 392, 397

- 8.1.8 Explain that humans help shape the future by generating knowledge, developing new technologies, and communicating ideas to others.

WET Activities (page): 93, 107, 219, 254, 293, 348, 353, 360, 392

Standard 2

Scientific Thinking

Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.

Computation and Estimation

- 8.2.2 Determine in what unit, such as seconds, meters, grams, etc., an answer should be expressed based on the units of the inputs to the calculation.

WET Activities (page): 116, 271, 328, 344

Manipulation and Observation

- 8.2.4 Use technological devices, such as calculators and computers, to perform calculations.

WET Activities (page): 293, 328,

Communication

- 8.2.7 Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.

WET Activities (page): 30, 311, 397

- 8.2.8 Use tables, charts, and graphs in making arguments and claims in, for example, oral and written presentations about lab or fieldwork.

WET Activities (page): 116, 136, 186, 206, 212, 279, 293, 328, 353

Standard 3

The Physical Setting

Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.

The Earth and the Processes That Shape It

- 8.3.6 Understand and explain that the benefits of Earth's resources, such as fresh water, air, soil, and trees, are finite and can be reduced by using them wastefully or by deliberately or accidentally destroying them.

WET Activities (page): 166, 201, 219, 232, 238, 254, 260, 267, 271, 274, 279, 293, 307, 316, 328, 338, 344, 367, 377, 382, 392, 407

Matter and Energy*

- 8.3.9 Demonstrate, using drawings and models, the movement of atoms in a solid*, liquid*, and gaseous* state. Explain that atoms and molecules are perpetually in motion.

WET Activities (page): 25, 30, 35, 72, 107, 116, 182, 201, 338

- 8.3.15 Identify different forms of energy that exist in nature.

energy: what is needed to do work

work: a force acting over a distance to move an object

force: a push or a pull that can cause a change in the motion of the object

*motion: a change in position of an object in a certain amount of time

*atoms: smallest particle of an element that has the properties of that element

*element: the simplest type of pure substance; a substance consisting entirely of atoms having identical chemical properties

*solid: matter with a definite shape and volume

*liquid: matter with no definite shape but with a definite volume

*gas: matter with no definite shape or volume

*metals: one class of substances that are mostly shiny, bendable, and good conductors of heat and electricity

*non-metals: one class of substances that does not have metallic properties; usually a poor conductor of heat and electricity

*heat: a form of energy characterized by random motion at the molecular level

*radiation: energy transfer through space

*convection: heat transfer in liquids and gases by transport of matter from a region of one temperature to a region of a different temperature

WET Activities (page): 25, 35, 144, 174, 201, 242, 262

Standard 5

The Mathematical World

Students apply mathematics in scientific contexts. Students use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.

Shapes and Symbolic Relationships

8.5.4 Illustrate how graphs can show a variety of possible relationships between two variables.

WET Activities (page): 279, 293

Reasoning and Uncertainty

8.5.6 Explain that a single example can never prove that something is always true, but it could prove that something is not always true.

WET Activities (page): 93, 338

8.5.7 Recognize and describe the danger of making over-generalizations when inventing a general rule based on a few observations.

WET Activities (page): 311

8.5.8 Explain how estimates can be based on data from similar conditions in the past or on the assumption that all the possibilities are known.

WET Activities (page): 293

8.5.9 Compare the mean*, median*, and mode* of a data set.

WET Activities (page): 367

Standard 7

Common Themes

Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate rates of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.

Systems

- 8.7.2 Explain that even in some very simple systems, it may not always be possible to predict accurately the result of changing some part or connection.

WET Activities (page): 254, 316

Models and Scale

- 8.7.4 Explain that as the complexity of any system increases, gaining an understanding of it depends on summaries, such as averages and ranges*, and on descriptions of typical examples of that system.

*range: the difference between the largest and the smallest value

WET Activities (page): 186, 219, 293

Constancy and Change

- 8.7.5 Observe and describe that a system may stay the same because nothing is happening or because things are happening that counteract one another.

WET Activities (page): 72, 171,

- 8.7.7 Illustrate how things, such as seasons or body temperature, occur in cycles.

WET Activities (page): 25, 79, 116, 144, 157, 161, 174, 182, 201, 206, 262, 293, 348